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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/771,092	01/26/2001	William D. Fisher	10003512-1	7692

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AGILENT TECHNOLOGIES  
Legal Department, 51U-PD  
Intellectual Property Administration  
P.O. Box 58043  
Santa Clara, CA 95052-8043

EXAMINER

GORDON, BRIAN R

ART UNIT	PAPER NUMBER
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1743

DATE MAILED: 03/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/771,092

Applicant(s)

FISHER, WILLIAM D.

Examiner

Brian R. Gordon

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 and 35-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 35-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 7-3-03 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments, see applicants remarks, filed December 18, 2003, with respect to the rejection(s) of claim(s) 37-42 under Fouillet et al. have been fully considered and are persuasive. Therefore, the rejections have been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ford et al. US 6,045,759.

### ***Drawings***

1. The drawings were received on July 7, 2003. These drawings are approved.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

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4. Claims 1-14 and 35-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bares et al. US 5,023,625 in view of Ford et al. US 6,045,759.

Bares et al. discloses an invention to overcome the inability of the natural ink feed capillary action to adequately supply ink to a ink jet printhead during high frequency operation (pulse jet operation) and thereby extend  $F_{\max}$  beyond its present limits.

The device comprises a resistive heater element 11 (thermoelectric transducer) that is aligned with respect to an orifice plate, and an ink flow path supplies ink into a chamber or reservoir between the resistive heater element and the orifice plate. This improved system includes, among other things: 1) a piezoelectric system which is mounted internal to the ink cavity of an ink jet printhead; 2) an external piezoelectric system which is mounted directly on the orifice plate of an ink jet printhead; 3) dual independent piezoelectric systems which are both mounted internal to the ink cavity of the printhead; and 4) dual piezoelectric systems with one being internal to the ink cavity of the printhead and the other being external and mounted directly on the orifice plate of the printhead. The above described ink feed systems may be used to: 1) produce oscillations of controlled frequency,  $F_m$ , and controlled amplitude,  $I_m$ , of the ink meniscus at the ink ejection orifice and produce the ejection of ink drops from a single orifice with varying and controlled volumes; 2) extend the maximum frequency of operation,  $F_{\max}$ , of the ink jet printhead; and 3) extend the viscosity range of inks which may be used.

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In accordance with the invention, a piezoelectric material 22 such as quartz or barium titanate crystals or a kynar piezoelectric film is introduced into the ink cavity 14 as shown in FIG. 5, or is mounted externally on the outer surface of the orifice plate 16 as shown in FIG. 6. The material 22 is connected in such a manner that it can be energized with a controlled electrical signal, and this signal induces oscillations, of controlled frequency and magnitude, within the material 22. This action in turn produces a positive ink pressure within the ink cavity 14 and the ink channel 13 and thereby behaves as an ink pump. Both **internally** and externally mounted piezoelectric systems function in an equivalent manner.

The timing of the firing of resistor 11 with respect to the meniscus amplitude,  $I_m$ , of the induced meniscus oscillations is crucial. If the resistor 11 is fired at the equilibrium position, or points (T) in FIG. 4B, the ink jet printhead is operating in the "equilibrium mode" and medium volume ink drops,  $V_{eq}$ , are ejected. These ejected ink drops are of a volume equal to the case where the piezoelectric material is not pulsed.

The range of ejected ink drop volume may be extended by employing dual independently controlled piezoelectric systems within an ink jet printhead. FIG. 7 illustrates such a system where both independently controlled piezoelectric drivers 22 are incorporated within the ink cavity 14.

Bares et al. does not mention striking the dispenser in order to remove air bubbles.

Ford et al. discloses a method and apparatus for dispensing biological materials (DNA). In the processing of a biological reaction system, there is a need for

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consistently placing an amount of fluid on a slide. In order to accomplish this, several methods are used including a consistency pulse and a volume adjust means. Moreover, in order to reliably operate an automated biological reaction system, the dispenser must be reliable, easy to assemble and accurate (abstract).

To ensure accurate dispensing the system may be primed. Ford teaches to check for a good prime, the customer may flip the dispenser upside-down, tap the dispenser, dislodging any trapped air then pressing down on the barrel slowly to move the air bubble past the ball seat. The customer may then flip the coupler right-side-up and release the barrel. Good priming occurs with approximately one drop of waste (column 27, lines 1-6).

As to claims 5-8, Bares in view of Ford et al. does not specifically recite a particular strike rate or the amount of energy delivered by each strike.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the modified method of Bares by applying the appropriate strike rate and energy to remove the air bubbles as found necessary by the operator to increase the efficiency and accuracy of the modified device.

As to claims 13-14 and 41-42, Ford discloses dispensing biological materials.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the method of Bares et al. by employing the teachings of Ford et al. and striking or tapping the syringe to remove bubbles in order to provide for accurate and precise dispensing of fluids.

### **Conclusion**

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is 571-272-1258. The examiner can normally be reached on M-F, with 2nd and 4th F off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

brg

  
Jill Warden  
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